

REMARKS

Applicants acknowledge with thanks the allowable subject matter set forth in claims 21-26, 31-34, 36, 38 and 62-65.

The application has been amended to more clearly define the invention. In particular, claim 1 is amended to incorporate the subject matter of previous claims 2 and 6, to clarify the configuration of the annular ring and the drive means. More specifically, claim 1 now clearly recites that the annular ring includes a mold-carrying carousel supported by a support structure having inner and outer rails, and that the drive means includes a drive gear means driven by a drive sprocket and fixed to one of the circular rails. Claims 2 and 6 have been cancelled, and claims 3 and 4 are amended to reflect the appropriate antecedent basis. Moreover, claim 11 has been amended to independent form, further including the limitations of claim 12, and claim 12 has been cancelled accordingly. Also, claim 17 has been amended to include the limitations of claim 18, with claim 18 cancelled accordingly. Finally, new independent claim 66 has been added, representing previously presented claim 7 represented in independent form, and newly added dependent claims 67-69 depending therefrom. In view of these amendments and the remarks presented herein, reconsideration is respectfully requested.

In the Office Action, claims 1-10 stand rejected under 35 U.S.C. §102(b) as being allegedly anticipated by U.S. Patent No. 3,862,839 to Shimizu et al. (hereinafter "Shimizu"). Claims 11-16, 28-30, 35, 37, and 39-45 stand rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Shimizu in view of U.S. Patent No. 3,972,368 to Kikkawa et al. (hereinafter "Kikkawa"). Claims 17-20 and 27 stand rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Shimizu in view of U.S. Patent No. 3,200,451 to Worswick (hereinafter "Worswick"). Each of these rejections is respectfully traversed.

The Office Action alleges that Shimizu teaches a casting machine capable of casting aluminum ingot comprising a source of molten metal, a rotatable annular ring, a drive means for indexing molds to a source of molten metal, wherein the annular ring includes a mold carrying carousel, a support structure comprising floor mounted support rollers, a drive gear fixed to the circular rails, and a sprocket for driving gears, wherein the drive sprocket can be powered by an AC motor. Shimizu, however, lacks Applicants' claimed rotatable

annular ring that includes a mold-carrying carousel supported by a support structure having inner and outer rails, and the drive means includes a drive gear means driven by a drive sprocket and fixed to one of the circular rails.

In particular, claim 1 recites the mold-carrying carousel supported by inner and outer circular rails with a drive means fixed to one of the circular rails. In contrast, Shimizu teaches at column 11, line 53 through column 12, line 1, that "The mold 93 is set on the mold supporting fixture 96 moveable supported by wheels 94 and 95.... Also, it is preferable to make the supporting fixture 96 of the mold as a circular turn table, and a drive apparatus is installed in its center or its outer periphery." Such a turn table driven at its center is very different from Applicants' mold-carrying carousel supported by an inner and outer circular rail, with a drive means fixed to one of the rails. Shimizu does not teach any such circular rail system, but instead teaches a turn table which may be supported by wheels. Moreover, Shimizu does not teach or disclose a drive means fixed to such a rail system, but instead teaches driving the turn table at its center. Thus, Shimizu does not teach, disclose, or suggest the claimed rotatable annular ring including inner and outer circular rails as set forth in independent claim 1. As such, Shimizu does not anticipate claim 1, and reconsideration and withdrawal of the rejections based on Shimizu is therefore respectfully requested.

As noted, new independent claim 66 also defines the annular ring in a similar manner as claim 1, and further defines the drive means as comprising a drive gear means fixed to the carousel and a drive sprocket for driving the drive gear means. As noted above, however, Shimizu fails to disclose or suggest the annular ring including inner and outer circular rails, let alone any specific drive gear means with a drive sprocket. Accordingly, Shimizu fails to anticipate these newly added claims, and favorable consideration is therefore respectfully requested.

Claims 11-16, 28-30, 35, 37, 39-45 stand rejected under 35 U.S.C. §103(a) for allegedly being obviousness over Shimizu in view of Kikkawa. Kikkawa is cited by the Examiner for disclosing a Y-shaped launder and a skimming apparatus for scraping dross off molten metal. Kikkawa, however, does not account for the appreciable deficiencies of Shimizu which would render the present invention obvious.

In particular, amended independent claim 11 defines a Y-shaped launder with first and second receiving portions for receiving molten metal, with the first receiving portion being positioned to receive molten metal from one crucible, and with the second receiving portion being positioned to receive molten metal from another crucible. The launder further includes a molten metal delivery portion extending between these receiving portions and the carousel. As such, two separate sources of molten metal (at the two top legs of the "Y") feed into a single mold position (at the bottom leg of the "Y"). Applicants describe these features on page 5, lines 20 - 25, on page 14, line 31, and in Figures 1, 2, and 3 of the application.

In contrast, Kikkawa teaches tilting crucibles which are connected in series to a single source launder (the single bottom leg of the "Y") that delivers molten metal to two separate mold positions on the mold through the two other ends of the "Y", as shown in Figures 5-7 of Kikkawa. In essence, Kikkawa teaches the exact opposite of the claimed invention of claim 11, by teaching a single feed source to two separate molds as opposed to two separate feed sources for a single mold.

Clearly Shimizu and Kikkawa, whether considered alone or in combination, fail to disclose or suggest such an arrangement involving two receiving portions feeding to a single delivery portion. Accordingly, withdrawal of the obviousness rejections of claim 11, as well as the dependent claims depending therefrom, is deemed appropriate and is respectfully requested.


Claims 17-20 and 27 stand rejected under 35 U.S.C. §103(a) for asserted obviousness over Shimizu in view of Worswick. Worswick is cited by the Examiner for disclosing a water sprayer on the underside of a mold for cooling. Claim 17 depends from claim 1, and Worswick does not add anything to the deficient teachings of Shimizu as already described above. Moreover, Worswick fails to describe Applicants' plurality of nozzles for spraying water onto the molds, as recited in claim 17. In contrast to Applicants' claimed invention, Worswick is limited to circulating water into a space within the mold under the ingot as explained at column 2, lines 9 - 14 of Worswick. Applicants' claims 18-20 and 27 all dependent from newly amended claim 17, which further distinguish over Worswick. Thus, withdrawal of the obviousness rejections as to claims 17-20 and 27 is appropriate and is respectfully requested.

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Based on the foregoing, Applicants respectfully request withdrawal of all rejections of the claims and favorable reconsideration and allowance. Should the Examiner wish to discuss any of these issues in further detail, the Examiner is invited to contact Applicants' undersigned representative by telephone at 412-471-8815.

Respectfully submitted,

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